

UGANDA PROTECTORATE.

ANNUAL MEDICAL AND SANITARY REPORT
FOR THE
Year ended 31st December, 1916.

ERRATA.

- Page 7. (B) Financial (2) for "£22,763," read "£22,907," for "£12,006" read "£11,962" and for "£34,769" read "£34,869"
- Page 7. Section II. (A) Para 3 line 1 for "18065" read "17695"
- Page 7. Last line for "5679" read "5675" and for "20" read "10"
- Page 8. Last para but 2 (Beri-Beri) for "2 deaths" read "no deaths"
- Page 8. Last line but 5 (C.S. Fever) for "94" read "71"
- Page 8. Last line but 2 (Dysentery) for "743" read "827"
- Page 9. Para (6) (Measles) for "28" read "14"
- Page 9. Para (9) (Pneumonia) for "29" read "24"
- Page 10. (Helminthic diseases) for "150" read "151"
- Page 14. 7th line from the bottom for "considerably less" read "only slightly more"
- Page 18. To last para but one after "during the year" add "and 335 cases with 1 death at the Entebbe Military Hospital"
- At the foot of the Table VII. on Page 37 add the following footnote:—
"The above table includes 335 cases with 1 death treated at the Military Hospital Entebbe. (These are not shewn in the table on Page 18 q. v.)"
- Page 20. Add "J. Stewart, Laboratory Assistant" †

UGANDA PROTECTORATE.

ANNUAL
MEDICAL AND SANITARY REPORT

FOR THE

YEAR ENDED 31ST DECEMBER, 1916.

Published by Command of His Excellency the Governor.



ENTEBBE :

PRINTED BY THE GOVERNMENT PRINTER, UGANDA.

1917.

THE PRINCIPAL MEDICAL OFFICER'S OFFICE,

ENTEBBE, UGANDA,

27th September, 1917

SIR,

I have the honour to submit, for the information of His Excellency the Acting Governor and for transmission to the Right Honourable the Secretary of State, the Medical Report on the health and sanitary condition of the Uganda Protectorate for the year 1916, together with the Returns, etc., appended thereto.

I have the honour to be,

Sir,

Your obedient servant,

A. D. P. HODGES,

*Principal Medical Officer,
Uganda Protectorate.*

THE CHIEF SECRETARY

TO THE GOVERNMENT,

UGANDA PROTECTORATE.

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SECTION I.

ADMINISTRATIVE.

(A) Medical Staff.

The sanctioned establishment for the Medical Staff was :—

- Principal Medical Officer.
- Deputy Principal Medical Officer.
- Medical Sanitary Officer.
- 2 Senior Medical Officers.
- 14 Permanent Medical Officers.
- 1 Bacteriologist.
- 1 Medical Officer of Health.
- 9 Temporary Medical Officers.
- 1 Entomologist.
- 1 Dental Surgeon.
- 3 Nursing Sisters.
- 2 European Dispensers.
- *1 European Sleeping Sickness Inspector.
- 1 Laboratory Assistant.
- 2 Assistant Surgeons.
- 18 Sub-Assistant Surgeons.
- 6 Compounders.
- And a varying number of native attendants.

The shortage on establishment during the year consisted of :—

- 1 Permanent Medical Officer (restored to active list of the army).
- 1 Temporary Medical Officer.
- 1 Temporary Medical Officer from 30-6-16.
- 1 Assistant Surgeon.
- 1 Sub-Assistant Surgeon for six months.
- 2 Sub-Assistant Surgeons for nine months.

A large part of the staff was engaged on military duty as will be shown below.

* Inadvertently omitted from 1915 Report. Has been absent on military duty since 1914.

The Clerical Staff at Headquarters remained the same as in 1915, *viz.* :—

European—

Chief Clerk to the Principal Medical Officer.
Assistant Clerk.
Medical Storekeeper.

Asiatic—

1 Third Grade Clerk.
2 Fourth Grade Clerks.

African—

1 Native Clerk.

LIST OF APPOINTMENTS, CHANGES, &c., IN STAFF.

From England—Nil.

From India—Sub-Assistant Surgeons Mangal Sain, Maqbull Haqq, and C. P. Andrews.

Secondments—Sub-Assistant Surgeon Hukam Singh remained seconded to the East Africa Protectorate, and Sub-Assistant Surgeon Karta Ram from East Africa Protectorate, both for military duty.

Transfers—Mr. A. Littlewood, Sleeping Sickness Inspector, was transferred to Kampala Municipality on 13-4-16.

Promotions—Nil.

Invalidings—Nil.

Deaths—Nil.

Leaves—The following were on leave during the periods stated opposite their names :—

		<i>From</i>		<i>To</i>
Dr. J. M. Collyns, M.O.H.	...	1st Jan., 1916	...	11th August, 1916
Dr. R. J. A. Macmillan	...	26th Oct., 1916	...	End of year
Dr. R. S. Taylor	...	26th Nov., 1916	...	End of year
*Mr. W. F. Fiske, Entomologist		10th Mar., 1916	...	30th June, 1916

MEDICAL OFFICERS AND MEMBERS OF THE SUBORDINATE STAFF ENGAGED ON MILITARY DUTY DURING 1916.

Europeans.—Six Medical Officers, including the Bacteriologist, one Dispenser and one Sleeping Sickness Inspector were engaged solely on military duty throughout the year. Eight Medical Officers, including the Medical Sanitary Officer, and one Nursing Sister, the Laboratory Assistant and the Junior European Clerk were engaged solely on military duty for periods varying from one to eleven months. Of these, three Medical Officers and one Nursing Sister were also engaged on civil as well as military duty for periods varying from one to seven months. As was also the case during 1915, five Medical Officers, including the Principal and Deputy Principal Medical Officers, and the Medical Storekeeper filled military posts as well as civil throughout the year, while the Matron of the European Hospital, Entebbe, the Principal Medical Officer's Chief Clerk and the clerical establishment generally assisted in military work throughout the year.

Asiatics.—Five Sub-Assistant Surgeons were engaged solely on military duty throughout the year, of whom one was still seconded to the East Africa Protectorate, and another seconded from East Africa to the Uganda Protectorate. One Assistant Surgeon and five Sub-Assistant Surgeons performed civil and military duty for periods varying from one to twelve months. Two Sub-Assistant Surgeons were solely on military duty for three and eight months respectively.

Two Compounders were solely on military duty and another on civil and military duty throughout the year. One Compounder did civil and military duty for four months.

*Did not return for further investigations.

In all six Medical Officers, one European Dispenser, one Sleeping Sickness Inspector, five Sub-Assistant Surgeons and two Compounders were, owing to military duty, unavailable for civil work throughout the year and others of the staff were unavailable for various periods. The maximum of Medical Officers engaged in purely civil duties at any one time during the year was seven, European Dispenser one, Assistant Surgeon one, Sub-Assistant Surgeons seven, Compounders two.

(B) Financial.

The estimated revenue and expenditure for the Medical Department for the year 1916-1917 was as follows:—

(1)	Estimated revenue	....	....	£352
(2)	Estimated expenditure—			
	Personal Emoluments	....	£22,763	
	Other Charges	....	12,006	
			—————	<u>£34,769</u>

SECTION II.

PUBLIC HEALTH.

(A) General Remarks.

The conditions of general health continue satisfactory. The number of cases treated shows a decrease to 75,537 cases with 553 deaths, from 77,467 cases with 206 deaths in 1915 and 90,730 cases and 298 deaths in 1914.

The above total does not include cases treated at the Field Dispensaries of the Nile and the Northern Garrison, nor cases treated at the Military Hospital, Bombo, or other military hospitals, these cases not being included in the general statistical tables.

The total number of communicable diseases treated was 18,065, as against 15,670 in 1915 and 18,290 in 1914. There were increases in the returns for cerebro-spinal meningitis, dysentery, malaria, pneumonia, plague and venereal diseases. Decreases are noted in returns for blackwater fever, relapsing fever and smallpox.

Native returns show an increase in number of deaths attributed to plague, dysentery and venereal diseases.

Decreases are shown in the number of deaths attributed to sleeping sickness, from 348 to 207, smallpox, from 756 to 527 and muhinyo, from 1,661 to 1,504.

The diseases calling for special attention are plague, smallpox, cerebro-spinal meningitis, dysentery and venereal diseases among natives and malaria and blackwater fever among Europeans and Asiatics.

The native death returns show the chief causes of mortality to be fevers, chest complaints, venereal diseases, muhinyo, paralysis, diarrhoea, childbirth, tuberculosis, plague and smallpox.

Communicable Diseases.

(1) MOSQUITO OR INSECT-BORNE.

The principal causes under this head were malaria, relapsing fever, blackwater fever and sleeping sickness.

Malaria.—The number of cases increased from 4,648 with 9 deaths in 1915 to 5,679 cases with 20 deaths.

Blackwater Fever.—The number of cases treated decreased from 65 with 18 deaths in 1915 to 46 with 10 deaths in 1916. The total death rate was 21·7 per cent as compared with 25·6 per cent in 1915.

Of the above total 36 cases, with 10 deaths, are included in the returns from Government Hospitals and Dispensaries, and 10 cases, with no deaths, are returned from the Church Missionary Society's Hospital, Namirembe.

Two European Officials were treated at Government Hospitals for blackwater fever and of these one case was fatal. Two other cases, one fatal, occurred in European Officers on active service.

Dengue Fever.—Two cases with no deaths were recorded in 1916, as compared with nil in 1915.

Yellow Fever.—Is not known to occur.

Elephantiasis.—The number of cases and deaths is not known, as diseases of lymphatic system and connective tissue are not shown in detail in the returns for this year.

Relapsing Fever.—148 cases with 1 death were returned as compared with 251 cases with 4 deaths in 1915.

An increase occurred at Masaka to 106 cases from 59 cases in 1915. The number of cases treated at Kampala decreased from 85 with 3 deaths to 20 with 1 death.

Trypanosomiasis.—The total admissions amounted to 17 with 10 deaths including one admission and 3 deaths at the Sleeping Sickness Camp.

The following table shows the distribution of deaths attributed to sleeping sickness in combined native and official returns since 1905:—

TABLE OF DEATHS FROM SLEEPING SICKNESS.

Year.	PROVINCES OR DISTRICTS.							Totals.
	Buganda.	Busoga.	Bunyoro.	Ankole.	Toro.	Nile Province.	County Unknown.	
1905 ...	8,003	No record	—	—	—	—	—	8,003
1906 ...	5,304	849	369	—	—	—	—	6,522
1907 ...	3,407	593	170	—	—	5	—	4,175
1908 ...	1,723	1,478	461	—	—	—	—	3,662
1909 ...	925	603	254	—	—	—	—	1,782
1910 ...	527	698	277	37	—	7	—	1,546
1911 ...	253	1,013	168	6	46	1	—	1,487
1912 ...	82	747	84	11	5	—	3	932
1913 ...	57	554	41	21	29	—	6	708
1914 ...	24	354	15	65	8	—	—	466
1915 ...	3	244	11	88	4	2	—	352
1916 ...	2	155	7	37	8	—	—	209
TOTALS	20,310	7,288	1,857	265	100	15	9	29,844

No deaths were attributed to sleeping sickness in the native returns for Buganda.

(2) INFECTIOUS OR EPIDEMIC DISEASES.

Beri-Beri.—Two cases with two deaths were reported among the prisoners at Kampala. These are the only cases that have as yet been recorded in Uganda. Both were prisoners from the Eastern Province.

Cerebro-Spinal Fever.—The number of cases increased from 4 with 3 deaths in 1915 to 94 with 42 deaths in 1916. Bombo, Entebbe, Jinja, Kampala and Mbale account for nearly all the cases. The increase is due to war conditions.

Dysentery.—The number of cases recorded shows an increase to 743 with 19 deaths from 500 with 18 deaths in 1915. The increase is general and is due to war conditions.

The native death returns also show a further increase.

Enteric Fever.—16 cases with one death were returned as compared with 13 with no deaths in 1915.

Erysipelas.—Two cases were treated as against 4 in 1915.

Gonorrhœa.—There were 1,863 cases with 3 deaths treated at the general hospitals as compared with 1,657 treated in 1915. The special hospitals remained closed in 1916.

Influenza.—25 cases were treated as compared with 17 in 1915.

Leprosy.—14 cases came under observation of which 11 were of the nodular and 3 of the anæsthetic type. The figures for 1915 were 8 and 17 respectively.

Measles.—28 cases were treated as compared with 15 in 1915.

The native returns show a further decrease from 207 deaths in 1915 to 130 in 1916.

Undulant Fever (Malta Fever).—Three cases were returned in 1916 as against 7, with 1 death, returned as muhinyo in 1915.

Native returns show 1,504 deaths from muhinyo as compared with 1,661 in 1915.

Plague.—321 cases with 283 deaths came under treatment as compared with 5 and 5 deaths in 1915.

Epidemics at Kampala and Jinja towards the end of the year were responsible for the great increase in the number of cases under treatment.

According to native returns (and returns by native inspectors in the Eastern Province) the deaths ascribed to plague during the last five years were as follows :—

District.	1916.	1915.	1914.	1913.	1912.
Buganda ...	220	227	340	568	546
Busoga ...	462	273	88	468	667
Bukedi ...	2,562	1,912	1,963	1,671	1,659
Teso ...	458	615	651	261	—
Lango ...	627	951	624	222	159
Bunyoro ...	17	4	4	40	13
Toro ...	4	2	21	—	9
Ankole ...	34	44	34	62	47
Nile ...		No returns.			
TOTALS ...	4,384	4,028	3,725	3,292	3,100

Pneumonia.—There were 152 cases under treatment, 29 of which were fatal. In 1915 there were 110 cases with 32 deaths.

Smallpox.—The number of cases under treatment decreased from 144 with 32 deaths in 1915 to 104 cases with 25 deaths in 1916.

The following table shows the number of deaths according to native returns (and returns by native inspectors) during the last five years :—

District.	1916.	1915.	1914.	1913.	1912.
Buganda ...	111	537	20	10	18
Busoga ...	334	210	870	317	482
Bukedi ...	1,537	815	353	—	—
Teso ...	54	370	142	—	—
Bunyoro ...	—	1	—	7	—
Toro ...	5	4	4	—	—
Ankole ...	77	4	1	3	11
Nile ...		No returns.			
TOTALS ...	2,118	1,941	1,390	337	511

Vaccinations.—54,686 vaccinations were performed in 1916 as compared with 128,689 in 1915.

A table showing the number vaccinated and percentage results is given under Section 3.

Syphilis.—The special hospitals for the treatment of this disease remained closed during 1916.

At the general hospitals 4,636 cases, with 6 deaths, were treated as compared with 4,488 cases, with 5 deaths, in 1915.

According to the native returns the deaths attributed to this disease during the last five years were as follows:—

District.	1916.	1915.	1914.	1913.	1912.
Buganda	603	413	427	561	633
Busoga	539	465	426	435	313
Bunyoro	148	230	595	591	221
Ankole	631	725	593	498	379
Toro	128	135	161	202	212
Nile		No	returns.		
TOTALS ...	2,049	1,968	2,202	2,287	1,758

Tuberculosis.—There were 14 cases with 4 deaths as compared with 11 cases and 3 deaths in 1915.

Yaws.—720 cases were returned under this head as against 486 in 1915.

(3) HELMINTHIC DISEASES.

There were 85 cases recorded under Cestoda and 150, with 1 death, under Nematoda as compared with 112 and 314 respectively last year.

(B) European Officials

There were 480 cases of sickness treated with one death and 430 officials were placed off duty.

In 1915 there were 599 cases with no deaths, 472 being placed off duty.

A fatal case of plague, not included in the above figures, occurred in a Military Officer employed on the armed vessels on Lake Victoria.

Of the total admissions 138 were due to malaria and 2 to blackwater fever, 1 to enteric fever, 97 to diseases of the digestive system, 13 to dysentery, 1 to relapsing fever, 21 to diseases of the respiratory system, and 47 to injuries.

The following table shows the admissions under the four firstnamed heads, as compared with the three preceding years and also the percentage which they formed of the total admissions:—

Diseases.	1916.		1915.		1914.		1913.	
	Cases.	Percentage of total admissions.	Cases.	Percentage of total admissions.	Cases.	Percentage of total admissions.	Cases.	Percentage of total admissions.
Malaria	138	28·75	126	21·03	186	31·9	155	36·0
Blackwater Fever ...	2	0·42	3	0·50	6	1·03	4	1·04
Enteric	1	0·21	5	0·83	12	2·06	1	—
Digestive	97	20·21	139	23·20	123	21·13	101	17·0

Four European Officials were invalided from the Protectorate during the year, the causes of invaliding being general debility, blackwater fever, mitral incompetence and neurasthenia.

The following table shows the number of European Government Officials invalided during the past five years, with the causes of invaliding:—

Diseases.	1916.	1915.	1914.	1913.	1912.	Total.
Blackwater Fever	1	—	1	1	—	3
Circulatory Affections	1	1	—	—	1	3
General Debility	1	—	—	—	—	1
Nervous and Mental Diseases	—	—	—	2	3	5
Neurasthenia	1	—	1	—	—	2
Tuberculosis	—	—	1	—	—	1
Leukaemia	—	—	1	—	—	1
Digestive	—	2	—	—	—	2
TOTALS ...	4	3	4	3	4	18

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES OF EUROPEAN OFFICIALS DURING 1916.

STATIONS.	Total number of officials resident.	Average number resident.	Total number on sick list.	Total number of days on sick list.	Average daily number on sick list.	Percentage of sick to average number resident.	Average number of days on sick list for each patient.	Average sick time to each resident.	Total number invalided.	Percentage of invalidings to total residents.	Total deaths.	Percentage of deaths to total residents.	Percentage of deaths to average number residents.	Number of cases of sickness contracted away from residence.
Bombo	72	20	80	362	0.99	4.95	4.53	18.10	1	1.39	..	..	..	21
Butiaba	..	..	No record	..	..	..	..	..	..	No record	..	..	..	..
Entebbe	123	55.5	108	261	0.72	1.29	2.42	4.70	2	1.63	1 (a)	1.63	3.60	22
Fort Portal	..	..	No record	..	..	..	..	..	..	No record	..	..	..	..
Gulu	5	3	4	10	0.03	0.37	2.50	2.00	..	..	..	..	..	..
Hoima	..	No record	..	Incomplete	..	..	..	..	..	..	..	..	..	..
Jinja	104	12	38	75	0.20	1.71	1.98	6.25	..	..	..	..	..	12
Kampala	83	35.4	57	328	0.90	0.25	5.75	9.27	..	..	..	..	..	8
Kitgum	..	..	No record	..	..	..	..	..	..	No record	..	..	..	..
Lira	22	2	5	30	0.08	4.11	6.00	15.00	..	..	..	..	..	4
Masaka	..	..	79	507	0.30	..	6.43	..	..	Records incomplete	..	..	..	..
Masindi	31	4.78	10	63	0.17	3.53	6.30	13.18	..	..	1	3.23	20.92	2
Mbale	24	3.04	6	175	0.48	15.87	29.17	57.57	..	..	..	..	..	2
Mbarara	8	4.28	9	54	0.15	3.45	6.00	12.62	..	..	..	..	..	5
Namasagali	6	4	12	45	0.12	3.07	3.75	11.25	1	16.66	..	..	..	..
Soroti	6	3.33	22	15	0.05	1.50	0.68	4.50	..	..	..	..	..	13
TOTALS ..	484	147.33	430	1,925	5.26	3.57	4.48	13.07	4	2.07	2	0.41	1.36	89

(a) One East African Officer (Military).

(C) Native Officials including Asiatics.

There were 1,024 cases treated with 5 deaths as compared with 1,118 with 9 deaths in 1915.

Of the total admissions 885 were placed off duty, and the remainder continued to do duty while under treatment.

The chief causes of admission were: malaria, 497 cases; blackwater fever, 7 cases; diseases of the digestive system, 115 cases; respiratory and injuries, 62 cases.

No Asiatic Officials were invalided during the year.

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES
OF ASIATIC AND NATIVE OFFICIALS DURING 1916.

STATIONS.	Total number of officials resident.	Average number resident.	Total number on sick list.	Total number of days on sick list.	Average daily number on sick list.	Percentage of sick to average number resident.	Average number of days on sick list for each patient.	Average sick time to each resident.	Total number invalided.	Percentage of invalidings to total residents.	Total deaths.	Percentage of deaths to total residents.	Percentage of deaths to average number residents.	Number of cases of sickness contracted away from residence.
Bombo	32	21	93	246	0·67	3·28	3·37	11·71	..	..	..	..	..	17
Butiaba	No record.	..	..	..	..	..	..	..	..	..	..	..	..	..
Entebbe	98	70	104	504	1·38	1·97	4·85	7·20	..	..	..	..	..	12
Fort Portal ..	Incomplete.	..	..	..	..	..	..	..	..	..	..	..	..	..
Gulu	Incomplete.	17	..	..	..	..	..	..	..	..	..	..	..	..
Hoima	Incomplete.	..	..	..	..	..	..	..	..	..	..	..	..	..
Jinja	130	50	224	702	1·92	3·84	3·13	14·04	..	..	5	3·85	10	12
Kampala	105	55	190	744	2·03	3·70	3·92	13·53	..	..	..	..	..	..
Kitgum	No record.	..	..	..	..	..	..	..	..	..	..	..	..	..
Lira	2	1·20	1	18	0·05	4·10	18·00	15·00	..	..	..	..	..	..
Masaka	Incomplete.	(47)	(169)	(0·46)	..	(3·60)	..	..	..	..	..	..	..	..
Masindi	27	8·16	17	162	0·45	5·46	9·53	19·86	..	..	..	..	..	7
Mbale	9	5·82	8	347	0·95	16·29	43·37	59·78	..	..	..	..	..	..
Mbarara	12	5·26	15	74	0·20	3·86	4·93	14·07	..	..	..	..	..	8
Namasagali ..	150	130	130	503	0·35	0·27	3·87	3·87	..	..	..	..	..	..
Soroti	12	3·10	39	46	0·13	4·02	1·10	14·97	..	..	..	..	..	13
West Nile ..	Records incomplete.	..	..	..	..	..	..	..	..	..	..	..	..	..
TOTALS	577	349·54	885	3,515	9·60	2·75	3·97	10·06	..	..	5	0·87	1·43	69

SECTION III.

SANITATION.

(A) General Review of Work done.

1. ADMINISTRATIVE.

From August 7th to October 30th I was absent from the Protectorate on military duty.

Dr. J. M. Collyns returned from leave and assumed duty as Medical Officer of Health, Kampala, on August 21st and acted for me during my absence.

Tours of Inspections.—Besides visits to Kampala, Jinja and Bombo a tour was made in the Eastern Province.

The Sanitary Inspector for Kampala was seconded for military duty from April 1st to December 31st, and Mr. A. Littlewood acted as his substitute but was frequently on the sick list.

Town Planning.—In the Eastern Province township areas were surveyed and laid out at Gogonia, Lira, Lale, Ngora, Agu, Kumi and Mjanji and plans have been submitted for the proposed new bazaar on Kololo Hill at Kampala.

LAWS, PASSED, ETC., UNDER THE TOWNSHIPS ORDINANCE.

The Township Rules have now been thoroughly revised and include several innovations for the promotion of public health, notable examples of these are (1) The alteration of building rules dealing with construction of dwellings particularly as regards ventilation. (2) Rules giving increased powers to the Township Authority in the matter of removal or alteration of existing buildings which are unfit for habitation, as well as summary powers for destruction of buildings which are a danger to public health. (3) Rules reserving buildings or parts of buildings to the strict usage for which they are designed, *e.g.*, shops, grain and cotton stores, and dwellings. (4) Rules giving powers to the Governor to reserve areas in the townships for European occupation only.

Under *The Infectious Diseases Ordinance*.—The following places were declared infected on account of outbreaks of plague:—Masindi Port, Namasagali, Kampala, Port Bell, and Jinja; and Rules were published and applied to the last three places prohibiting the export and import of merchandise and produce without permits.

Also a series of Rules was made—*The Infectious Diseases Township Rules No. 2* giving increased powers to the Medical Authorities in dealing with contacts, infected premises, etc.

A new law "*The Prevention of Disease, Cotton and other Trades, Ordinance, 1916*," was enacted under which powers are given for the prevention of infectious disease to restrict "the movement, handling or storing of produce, merchandise or cotton."

An "*Ordinance, relating to Diseases of Animals*" has been drafted and submitted for approval.

2. PREVENTIVE MEASURES.

MOSQUITO AND INSECT-BORNE DISEASES.

*Malaria.*1. *Petty Anti-Malarial Measures.*

(a) The anti-malarial gangs have been employed as in former years. The Senior Medical Officer attributes, to a great extent, the decreased malarial sick rate in Kampala to the success of the efforts of the gang employed there.

(b) The areas cleared of vegetation and planted with short grass have been preserved.

2. *Major Anti-Malarial Measures—Swamp Drainage.*

The drainage of the swamps at various stations has been maintained and improved, but the abnormal rise in level of the Nile and Lakes has caused extension of swampy areas at some places, notably at Butiaba where the Lake Albert has submerged some of the ground close to the European houses.

At Soroti.—Extensive reclamation work has been done in the adjacent marshes: about seven miles of drains have been cut and the Medical Officer reports that a considerable reduction in the number of anopheles at that station has been noted.

At Kampala.—The drainage and planting of the swamp area has been increased. Here also the anopheles reduction has been noticeable, but in my opinion more than can be accounted for by new work done on the swamp. I attribute it rather to the rainfall which being fairly constant throughout the year has caused frequent flushings of the open drains in the swamp so that these have not retained stagnant water long enough to breed mosquitoes.

The township boundary has been extended in order to deal with and drain a portion of the swamp formerly outside the township and full of pools caused by digging for brick material.

3. *Quinine Prophylaxis*.—The amount of quinine issued to Government dispensaries, of which a large proportion was used prophylactically, was 45,300 tabloids and tablets of five grains and 209 lbs. 6 ozs. of powder.

4. *Mosquito Protection of Quarters*.—This has been carried out on new official houses built this year.

(b) Trypanosomiasis.

The number of deaths from sleeping sickness throughout the Protectorate has still further diminished this year. Two deaths were recorded in the Buganda Kingdom.

The cleared areas at ports and ferries have been preserved.

The District Medical Officer, Gulu, reports that excellent progress has been made in the clearing of fly-infested jungle at river crossings in the Acholi country as also over a large area in the West Nile and Chua Districts.

(c) Spirillum Fever.

The removal of the Police lines in Kampala as an anti-plague measure has had the additional salutary result of doing away with a large collection of old huts which were repeatedly becoming tick-infested.

With the exception of Masaka the various stations have been comparatively free from this disease.

(d) Yellow Fever.

Not known in this Protectorate. The efforts of the anti-malarial gangs are directed towards the reduction of the stegomyia mosquito as well as that of the anopheles.

(e) Filariasis.

Nothing noteworthy has occurred.

Epidemic Diseases.**GENERAL.***Cerebro-Spinal Meningitis.*

Hitherto of minor importance though known to be endemic in some parts of the Eastern Province, this disease this year has made its appearance in several places throughout the Protectorate.

In most cases these outbreaks have originated among returning military porters from German East Africa where the disease was endemic before the war and where it has caused a considerable sick and death-rate among the expeditionary force.

In October and November several scattered cases of sudden death in Bunyoro were reported to be due to plague, but subsequent investigations have proved that the cause was cerebro-spinal meningitis and brought by returning military porters from German East Africa.

The question of subjecting these porters to a period of quarantine on arrival in this country was considered but abandoned as impracticable for various reasons and among them shortage of staff and also because there were no means of searching bacteriologically for "carriers," and a few "carriers" in each batch of porters would be more likely to spread the disease among the rest if crowded for a time in a camp than if they were quickly dispersed to their homes. Moreover while the majority of these porters were being demobilised the two principal ports of entry were plague-infected.

In December the disease broke out at Bombo in epidemic form among the King's African Rifles recruits. A large dépôt had been recently established and the lines had become overcrowded. The origin of infection was traced to a batch of recruits from the Eastern Province. Besides the usual isolation of sick and contacts the preventive measure was adopted of extending the accommodation so as to provide one hut for each recruit which very soon checked the spread of the disease. Unfortunately to further relieve the congestion at Bombo a large draft was sent to Entebbe which conveyed the infection to the lines there, but similar measures to those taken at Bombo soon put a stop to further trouble.

Smallpox and Vaccination.

Total death roll from smallpox was considerably less than in 1915 in spite of two epidemic outbreaks. The first of these occurred in a remote district of Busoga, a long distance from a Medical Officer and where for administrative reasons no inspector and vaccinator had been hitherto employed so that it was some time before the outbreak was checked. The second began in Mbarara and spread to Kabale in the Western Province. With the usual precautions the outbreak was confined to a small area.

It was fortunate that this did not occur a few months earlier when, prior to the advance of the British and Belgian forces into German East Africa, these two places had been important centres on the lines of communication. It is significant that the outbreak quickly followed the relaxation of the special precautions taken to prevent smallpox spreading to the troops.

The appended table of vaccinations include those performed on military troops and porters before leaving for the front but do not include a large number of vaccinations performed by missionaries and others.

It will be seen that a large number of failures are recorded among the observed results. The low percentage of successful results shown against the dry lymph obtained from the Lister Institute is chiefly due to the complete failure of one batch of lymph which may be accounted for by delay in transit.

The poor results obtained from the Nairobi lymph is a more serious matter as the bulk of the lymph used is obtained from this source. Also the Medical Officers have again expressed doubts as to the immunising power of the lymph. In support of this opinion they report 29 cases of smallpox among those recently vaccinated, of these ten (six of whom died) were known to have shown good marks. Cases were also recorded of pustular eruptions following vaccination and the District Medical Officer, Mbale, reported a series of cases of a pemphigoid rash following vaccination with one batch of Nairobi lymph.

TABLE OF VACCINATIONS (MILITARY AND CIVIL).

Lymph.	Successful.	Modified.	Failed.	Unknown.	Totals.	Number of known results.	Percentage of successful (plus modified).
Lister dry	722	—	362	904	1,988	1,084	66·60
Lister lanol	242	95	32	538	907	369	91·32
Nairobi glycer	8,397	918	4,520	35,784	49,619	13,835	67·32
Arm to arm	599	—	168	1,405	2,172	767	78·09
TOTALS ...	9,960	1,013	5,082	38,631	54,686	16,055	68·34

Total of military vaccinations for 1916 is 24,065.

Plague.

Plague has this year attacked both Jinja and Kampala in epidemic form. A special report on the epidemic is appended.

Since this report was written there have been no further cases at Jinja but sporadic cases of rat and human plague continue to crop up in the vicinity of Kampala.

In the Eastern Province there was a decrease this year in the death returns in Teso and the lower figure for Lango however is possibly not altogether accurate, as the system of inspection had to be modified owing to two of the native inspectors being convicted of taking bribes and otherwise practising extortion on the Lango peasants; consequently it was necessary to limit the scope of their operations for administrative reasons, so that it is possible that a number of deaths were not reported.

In Bukedi there has been a large increase especially in the Budama district. The District Medical Officer states "It is a matter for doubt whether this increase in Budama is wholly due to plague. I believe that many deaths were due to cerebro-spinal meningitis but cannot prove it." As this increase was most marked at the time when large numbers of military porters were being demobilised and coincident with other outbreaks, it is very probable that his surmise is correct.

Enteric Fever.

Of the few cases of true enteric which were reported some were imported and none of them appeared to have any connection with one another. There was an outbreak of a mild form of paratyphoid fever among Europeans and their native servants at the Church Missionary Society Mission at Iganga probably due to contamination of the surface spring in use.

No case of enteric occurred among inoculated persons of which there were 50.

Dysentery.

A large increase of cases was reported. A large proportion of these was in the Northern Province. Returning military porters swelled the sick rate from this disease in Kampala.

Leprosy.

The question of segregation of lepers has been again deferred.

Helminthic Diseases.

Measures for the prevention of these diseases are confined to protection of water supplies in townships.

(3) GENERAL MEASURES.

Sewage and Rubbish Disposal.—The routine methods in use in previous years for collection and disposal of night soil and town refuse have continued to give satisfaction.

Public Latrines.—An additional public latrine with accommodation for three natives has been erected in Entebbe.

Water Supply.—The surface wells at Kampala, Soroti, Lira and Gulu have been further improved with masonry.

Buildings—Prisons.—The temporary prisons at Soroti and Lira have been enlarged and the accommodation at the Central Gaol at Kampala increased by the addition of a large cell to hold 34 convicts.

Drainage.—Additions to masonry drains in Kampala and Entebbe were made as far as funds would allow.

Measures for the Propagation of Knowledge of Hygiene were carried out as in previous years.

(B) Recommendations for Future Work.

As there is no prospect of immediate change for the better in the general financial situation, one cannot make any proposal which would involve any demand on the public funds.

Rules made (in January, 1917) under the Infectious Diseases (Cotton) Ordinance have now restricted the shipment of seed cotton on Lake Steamers, but the recommendation to prohibit the transit of seed cotton from the plague endemic area in the Eastern Province to the ports on Lake Victoria has again been shelved.

That the recommendation was, and is, of urgent importance has been made clear by the recent incidence of epidemic plague at Kampala and Jinja for which in my opinion this traffic was mainly responsible.

The question of dealing with the large accumulations at ginneries of cotton seed which cannot now be exported needs serious consideration.

C. J. BAKER,
Medical Sanitary Officer.

SECTION IV.

METEOROLOGY.

All available information under this head is embodied in the Blue Book.

SECTION V.

HOSPITALS AND DISPENSARIES.

Accommodation.

The hospital accommodation was as follows:—

Europeans.—There were two Government hospitals for Europeans, one at Entebbe and one at Jinja. The Entebbe hospital has four single-bed wards and one two-bed ward. At Jinja there is one single-bed and one three-bed ward, giving a total accommodation in the Protectorate of ten beds.

Asiatics.—There was one Asiatic hospital at Entebbe with three beds. Apart from this, patients are treated in their own homes or in the native hospitals.

Natives.—The accommodation for natives was as follows:—

						<i>No. of Beds.</i>
Entebbe Civil ...	...	...	...	...	...	25
Entebbe Isolation	...	...	...	...	...	8
Bombo ...	...	...	...	...	...	12
Butiaba ...	...	...	...	...	...	3
Gulu ...	...	...	...	...	...	6
Fort Portal ...	...	...	...	...	...	4
Hoima ...	...	...	...	...	...	8
Kampala ...	...	...	...	...	...	26
Jinja ...	...	...	...	...	...	20
Masaka ...	...	...	...	...	...	6
Masindi ...	...	...	...	...	...	8
Mbale ...	...	...	...	...	...	8
Mbarara ...	...	...	...	...	...	7
Namasagali ...	...	...	...	...	...	7
Soroti ...	...	...	...	...	...	8
TOTAL ...						156

The hospital at Bombo was reserved entirely for military patients. The cases included in the statistical returns for Bombo are civilians treated at the dispensary.

The buildings at Butiaba, Gulu and Fort Portal are of a temporary nature and those at Soroti are partly so.

All native hospitals have a dispensary attached and there are in addition temporary dispensaries at Lira, Kitgum and Kabale, where also a few in-patients are treated.

The dispensary at Kitgum was in charge of a native dresser only, owing to shortage of staff. For the same reason the hospital at Fort Portal, the dispensary at Kabale and the field dispensary at Arua in the West Nile District were closed.

In addition to the general hospitals and dispensaries there is a sleeping sickness camp at Kyetume and special venereal diseases hospitals at Kampala and Masaka. The two last remained closed down owing to the absence of staff on military duty. Temporary venereal wards were, however, opened at Masindi, Mbarara and Gulu.

Permanent isolation camps for infectious diseases are placed at Kampala, Jinja and Mbale and a small infectious diseases hospital at Entebbe.

The total number of cases treated at the general hospitals and dispensaries was 75,202 with 552 deaths, as compared with 77,467 with 206 deaths in 1915.

In addition to the above totals 7,078 cases, with 32 deaths, were treated at Bombo military hospital, and 1,452 cases, with 1 death, at the field dispensary attached to the Northern Garrison.

There was only one admission to the sleeping sickness camp at Kyetume during the year. The number of cases remaining in camp at the end of last year was 89, deaths during the year 2, discharged 13, remaining at the end of this year 75.

TABLE A.

The following table shows, by stations, the total number of cases treated, with deaths, at Government hospitals and dispensaries during the years 1916 and 1915:—

STATIONS.	1916.		1915.	
	Total Cases.*	Deaths.	Total Cases.*	Deaths.
Bombo	5,710	6	6,559	3
Butiaba	1,208	1	1,859	4
Entebbe—				
European Hospital	430	1	286	—
Civil Hospital	5,968	32	4,587	21
Military Hospital	—	—	—	—
Fort Portal	—	—	5,867	2
Gulu	4,729	17	3,014	7
Hoima	6,448	2	5,955	3
Jinja—				
Civil	5,440	121	5,477	57
European	159	—	—	—
Kampala—				
Civil	11,409	290	12,478	47
Jail	1,163	—	—	—
Kitgum	—	—	2,968	—
Kumba (Kigezi)	—	—	—	—
Lira	1,890	7	1,312	14
Masaka	8,421	18	5,841	8
Masindi	7,381	15	6,766	7
Mbale	3,368	27	2,583	7
Mbarara	3,625	1	5,777	20
Namasagali	2,921	1	3,239	2
Soroti	4,932	13	2,899	11
TOTALS ...	75,202	552	77,467	206

* Includes all cases whether treated as indoor or outdoor cases.

In addition to the above totals 7,078 cases, with 32 deaths, were treated at Bombo military hospital, and 1,452 cases, with 1 death, at the field dispensary attached to the Northern Garrison, during the year.

BUILDINGS.

Masaka hospital was completed and minor repairs were carried out at Soroti, Mbale and other hospitals. The erection of medical buildings at Mubendi was postponed and also the increased accommodation at Bombo.

The following buildings are required and should be provided as soon as financial considerations allow :—

1. Lunatic Asylum.
2. European Hospital for Kampala.
3. European Hospital (small) for Masindi.

SECTION VI.

SCIENTIFIC.

No notice of the publication by any of the staff of papers or reports of a scientific nature has been received.

TABLE I.

RETURN SHOWING THE MEDICAL STAFF AND THE PRINCIPAL MEMBERS
OF THE SUBORDINATE STAFF.

Name and Qualifications.	Rank of Appointment.	Where stationed on 31st December, 1916.	REMARKS.
A. D. P. Hodges, C.M.G., M.D. (Lond.), M.R.C.S., L.R.C.P.	Principal Medical Officer	Entebbe *	
C. A. Wiggins, M.R.C.S., L.R.C.P., F.E.S. ...	Deputy P. M. O. ...	Do *	
C. J. Baker, M.R.C.S., L.R.C.P. ...	M. S. O. ...	Do	
G. C. Strathairn, M.B., CH.B., D.P.H. (Edin.)...	S. M. O. ...	Kampala *	
R. A. L. van Someren, M.D., CH.B., D.P.H. (Edin.)	Do ...	Jinja	
Lt.-Col. G. Lane, R.A.M.C. (S.R.) L.R.C.S. AND P. (Edin.), L.F.P.S. (Glas.)	Medical Officer ...	Restored to active list.	
J. H. Goodliffe, M.D., C.M. (Aberdeen) ...	Medical Officer ...	Bombo *	
A. C. Rendle, B.A., M.D., B.C., D.P.H. (Camb.), M.R.C.S., L.R.C.P.	Medical Officer ...	Masindi	
J. M. Collyns, M.B., D.P.H. (Lond.), M.R.C.S., L.R.C.P.	M. O. H. ...	Kampala	
J. H. Reford, B.A., M.D., B.CH., B.A.O., L.M., (Dub.), D.T.M. (Liv.)	Medical Officer ...	— †	
C. H. Marshall, M.R.C.S., L.R.C.P. ...	Do ...	— †	
H. B. Owen, M.B., B.C., D.T.M. AND H. (Camb.)	Do ...	— †	
L. Sells, L.R.C.P. (Edin.), L.S.A. ...	Do ...	Mbale	
J. A. Taylor, M.B., CH.B. (Edin.), L.M. (Dub.), D.T.M. (Liv.)	Do ...	Entebbe *	
J. E. Hailstone, M.A. (Camb.), M.R.C.S., L.R.C.P.	Do ...	Soroti	
G. D. H. Carpenter, B.A., M.D., B.CH. (Oxf.), M.R.C.S., L.R.C.P.	Do ...	— †	
R. E. McConnell, B.A., M.D., C.M. (Montreal), D.T.M. (Liv.)	Do ...	— †	
B. Spearman, M.A., M.B., B.C., D.T.M. AND H. (Camb.)	Do ...	Lira	
A. H. Owen, M.R.C.S., L.R.C.P., D.T.M., AND H. (Camb.)	Do ...	— †	
H. R. Neilson, M.B., CH.B. (Aberdeen) ...	Do ...	Gulu *	
Captain G. J. Keane, R.A.M.C., M.D., CH.B., D.T.M. (Liv.)	Temporary M. O. ...	— †	
F. C. Doble, M.R.C.S., L.R.C.P. ...	Do ...	Kampala	
R. J. A. Macmillan, M.B., CH.B. (Edin.), D.T. (Liv.)	Do ...	On leave	
W. L. Webb, M.R.C.S., L.R.C.P. ...	Do ...	Mbarara	
N. S. Williams, B.A., M.R.C.S., L.R.C.P., B.C. ...	Do ...	Moroto	
R. S. Taylor, B.A., M.B., B.C., M.R.C.S., L.R.C.P.	Do ...	On leave	
W. L. Peacock, M.B., CH.B. (Glas.) ...	Do ...	— †	
H. L. Duke, B.A., M.B., B.C., D.T.M. AND H. (Camb.)	Bacteriologist ...	— †	
G. S. Bateman, L.D.S., R.C.S. (Eng.) 1902 ...	Dental Surgeon ...	—	
Miss B. Petherbridge ...	Matron ...	Entebbe *	
Miss E. M. Pratt ...	Nursing Sister ...	— †	
Miss A. B. Gordon ...	Do ...	Jinja	
Mr. F. E. Westray ...	Dispenser ...	— †	
Mr. J. D. Buckland ...	Do ...	Butiaba	
Mr. H. Flint ...	Chief Clerk, P. M. O.'s Office	Entebbe *	
Mr. P. J. L. Waters ...	Assistant Clerk ...	Do *	
Mr. H. G. Blackman ...	Medical Storekeeper	Do *	

Also the following Indian Medical Assistants:—1 Assistant Surgeon (on civil and military duty),
18 Sub-Assistant Surgeons (7 on military duty, 2 on civil and military duty), and 7 Compounders
(2 on military duty, 2 on civil and military duty).

* On civil and military duty.

† On military duty.

TABLE IV.

Summary of Routine Sanitary Work done during the Year in the Town.

1. NAME OF TOWN—ENTEBBE.

---				Approximate Area.			Number of Proclaimed Open Spaces.
1914	...	...	...	12 square miles	...	...	13
1915	...	...	...	12 square miles	...	...	13
1916	...	...	...	12 square miles	...	...	13

2. POPULATION.

---		NUMBER OF ASIATICS.		NUMBER OF NATIVES.		NUMBER OF EUROPEANS.		TOTAL.
		Males.	Females.	Males.	Females.	Males.	Females.	
1914	...	240	86	2,725	2,333	90	50	5,524
1915	...	198	81	2,647	2,060	84	44	5,114
1916	...	201	96	2,523	1,985	83	42	4,930

3. HOUSING.

---				Number occupied by Europeans.	Number occupied by Natives and Asiatics include boys' quarters.
Number of Houses :--					
1914	...	...	...	87	451
1915	...	...	...	89	453
1916	...	...	...	89	453

Number of Huts :—

1914	...	...	...	...	...	1,223
1915	...	...	...	...	...	1,180
1916	...	...	..	...	...	1,180

4. MOSQUITO PROTECTION OF HOUSES.

---	1914.	1915.	1916.
Number of European houses wholly mosquito-protected ..	77	81	89
Number of European houses with mosquito room	3	20	20
Number rendered during the year wholly mosquito-protected ...	10	3	...
Number rendered during the year partially mosquito-protected...	...	...	...

5. ERECTION OF NEW BUILDINGS DURING THE YEAR.

---	1914.	1915.	1916.
Number of public buildings erected with sanction as to site, construction, and relation to other buildings	...	...	...
Number of houses erected with sanction as to site, construction, and relation to other buildings... ..	1	4	...
Number of huts erected with sanction as to site, construction, and relation to other buildings... ..	...	...	...
Number of houses built without sanction	...	...	...
Number of huts built without sanction	...	...	...

ACTION TAKEN.

	NUMBER OF PROSECUTIONS.		NUMBER DEMOLISHED.	
	Huts.	Houses.	Huts.	Houses.
1914	...	...	10	...
1915	...	...	43	...
1916	...	...	...	...

6. MARKETS.

	Total Number.	Number Paved and Drained.	Number Unpaved.
1914	3	1	2
1915	3	1	2
1916	3	1	2

7. SLAUGHTER-HOUSES.

	Total Number.	Number Paved and Drained.	Number Unpaved.
1914	1	1	..
1915	1	1	...
1916	1	1	...

8. LATRINES.

	FOR MALES.		FOR FEMALES.	
	Number.	Number of seats.	Number.	Number of seats.
Number of Public Latrines :—				
1914	12	48	...	...
1915	13	51	...	...
1916	14	51	...	...
Number of new Public Latrines erected during the year :—				
1914	...	...	...	...
1915	1	3	...	...
1916	1	3	...	...
Number of Public Latrines repaired during the year :—				
1914	1	...	...	...
1915	4	...	...	...
1916	2	...	...	...
Number of Public Latrines demolished during the year :—				
1914	...	...	...	...
1915	...	...	...	...
1916	...	...	...	...

	1914.	1915.	1916.
Number of Private Latrines	360	368	369
Average number of pails of nightsoil removed daily ...	408	428	430
Average number of soiled pails removed and clean pails substituted	59	73	75
Number of nightsoil men employed to clean latrines and remove excreta	27	27	27
Number of cesspools	907	820	826
Number of cesspools cleansed	...	...	...
Number of new cesspools constructed during the year ...	...	...	...
Number of old cesspools abolished	80	87	89
Number of cesspools oiled regularly by Department ...	...	...	...

9. REMOVAL OF REFUSE.

	1914.	1915.	1916.
Number of dustbins	46	42	41
Number of carts at work daily to remove refuse from streets	14	12	10
Amount of refuse removed daily	56	48	46
Number of carts at work daily to remove refuse from yards and premises	} Included in above.		
Amount of refuse removed daily from yards and premises			
Number of men employed for removing refuse ...	34	10	12

10. MODE OF DISPOSAL OF EXCRETA, REFUSE AND OFFAL.

	Daily average number of pails of excreta.			Daily average number of cartloads of refuse.			Daily average number of cartloads of Slaughter House and Market Offal.		
	1914.	1915.	1916.	1914.	1915.	1916.	1914.	1915.	1916.
Buried or trenched	228	210	208	50	40	42	1	1	1
Burnt	180	218	206	6	8	7	...	...	...
Thrown into sea	...	...	...	...	...	...	...	...	...
Otherwise dealt with	...	...	...	...	...	...	...	...	...

11. AVERAGE DAILY NUMBER OF CARTLOADS OF TIN CANS, BOTTLES, BROKEN CROCKERY, AND OTHER INCOMBUSTIBLE MATERIAL REMOVED FROM HOUSES, HUTS, AND COMPOUNDS.

1914.	1915.	1916.
1	1	1

12. WATER SUPPLY.

Nature of Water Supply.	1914.	1915.	1916.
Pipe-borne water :—			
Source (river, lake, or spring) :—			
Number of linear yards	} Lake	Victoria.	
Number of stand-pipes along roads			
Number of stand-pipes in compounds and houses...			
Wells :—			
Public :—			
Number	21	25	25
Number with pumps protected against surface water and mosquito-protected	...	...	...
Private :—			
Number	1	1	1
Number protected against surface water and mosquito-protected	...	...	...
Tanks :—			
Public :—			
Number underground	} Nil	Nil	Nil
Number mosquito-protected and served by pumps...			
Number above ground			
Number mosquito-protected			
Number of 400 gallons capacity or less			
Number above 400 gallons			
Private :—			
Number underground	1	1	1
Number mosquito-protected	1	1	1
Number above ground	174	178	179
Number mosquito-protected	1	1	1
Number of 400 gallons capacity or less	1	1	1
Number above 400 gallons	173	177	180
Nature of tank :—			
Wood	...	...	...
Iron	157	160	161
Concrete	17	18	19
Barrels :—			
Number	No	record.	
Number mosquito-protected	17	15	15

13. DRAINAGE.

Nature of Drainage.	Public.	Private.
Masonry drains :—		
Lineal yards of masonry drains :—		
1914	1,362	413
1915	2,079	413
1916	2,081	413
Lineal yards re-constructed during the year :—		
1914	...	...
1915	...	...
1916	...	...
Lineal yards repaired during the year :—		
1914	...	60
1915	...	...
1916	...	...
Lineal yards of new drains constructed during the year :—		
1914	...	60
1915	717	...
1916	...	...
Earth drains or ditches :—		
Number of linear yards of ditches cleaned :—		
1914	3,500	No record
1915	...	...
1916	...	...
Number of linear yards of ditches dug and graded :—		
1914	No record	No record
1915	No record	No record
1916	No record	No record
Average frequency of clearing ditches of grass :—		
1914	1 monthly	1 monthly
1915	1 monthly	1 monthly
1916	1 monthly	1 monthly

14. CLEARANCE OF UNDERGROWTH, LONG GRASS AND JUNGLE.

	1914.	1915.	1916.
Number of square yards of weeds, grass, and vegetation cut and removed... ..	Approximately 3 and 9 miles.		
Average frequency of clearance of rank vegetation on same area	Approximately 1 monthly.		

15. EXCAVATIONS AND LOW-LYING LAND.

	1914.	1915.	1916.
Number of pools and excavations	7	8	8
Number of excavations filled up	4	3	4
Amount of low-lying and marsh land raised and drained	...	...	...
Number of pools, marshes, streams, &c., fish-stocked ...	...	...	...
Number of cubic yards of material used for filling up pools and excavations	...	...	...
Number of persons fined for making new excavations ...	...	...	...
Average number of men daily employed in filling up pools, &c.	10	10	10

16. OILING.

	1914.	1915.	1916.
Number of drains oiled	...	...	...
Number of pools and excavations oiled	2	2	3
Number of tanks and barrels oiled	...	...	...
Average number of men daily employed for oiling drains, pools, and water-tanks or barrels	1	1	1

17. INSPECTIONS AND PROSECUTIONS.

	1914.	1915.	1916.
Number of inspectors employed	1	1	1
Number of houses inspected	443	447	448
Number of houses where larvæ were found	24	35	38
Number of notices served to remove conditions causing the breeding of larvæ	19	13	14
Number of persons fined for having mosquito larvæ on premises	...	...	..
Number of notices served to remove insanitary conditions on premises	97	25	28
Number of persons fined for not removing insanitary conditions after notice	1	..	...
Number of soda and ærated water factories inspected ...	1	1	1

C. L. BRUTON,

Assistant District Commissioner.

TABLE IV.—*continued.*

Summary of Routine Sanitary Work done during the Year in the Town.

1. NAME OF TOWN—KAMPALA.

—				Approximate Area.			Number of Proclaimed Open Spaces.
1914	...	...	...	1404.48 acres	...	...	8
1915	...	...	...	1404.48 acres	...	...	8
1916	...	...	...	3220.00 acres	...	...	8

2. POPULATION.

		NUMBER OF NATIVES.		NUMBER OF EUROPEANS.		NUMBER OF ASIATICS.		TOTAL.
		Males.	Females.	Males.	Females.	Males.	Females.	
1914	...	934	267	103	40	492	235	2,071
1915	...	862	292	110	46	474	264	2,048
1916	...	993	533	105	44	546	208	2,429

3. HOUSING.

—				Number occupied by Europeans.	Number occupied by Natives.	Number occupied by Asiatics.
Number of Houses :—						
1914	...	...	...	108	296	345
1915	...	...	...	114	294	347
1916	...	...	...	116	296	354

Number of Huts :—

1914	...	...	...	...	...	...	381
1915	...	...	...	...	...	...	363
1916	...	...	...	...	...	...	571

4. MOSQUITO PROTECTION OF HOUSES.

—		1914.	1915.	1916.
Number of European houses wholly mosquito-protected ..		71	77	80
Number of European houses with mosquito room		12	12	12
Number rendered during the year wholly mosquito-protected ...		11	6	3
Number rendered during the year partially mosquito-protected...		...	...	...

5. ERECTION OF NEW BUILDINGS DURING THE YEAR.

—		1914.	1915.	1916.
Number of public buildings erected with sanction as to site, construction, and relation to other buildings		15	12	3
Number of houses erected with sanction as to site, construction, and relation to other buildings... ..		34	24	23
Number of huts erected with sanction as to site, construction, and relation to other buildings... ..		172	52	701
Number of houses built without sanction		4	...	...
Number of huts built without sanction		18	29	16

ACTION TAKEN.

	NUMBER OF PROSECUTIONS.		NUMBER DEMOLISHED.	
	Huts.	Houses.	Huts.	Houses.
1914	...	4	252	...
1915	...	...	99	18
1916	...	2	509	12

6. MARKETS.

	Total Number.	Number Paved and Drained.	Number Unpaved.
1914	1	...	1
1915	1	...	1
1916	2	...	2

7. SLAUGHTER-HOUSES.

	Total Number.	Number Paved and Drained.	Number Unpaved.
1914	1	1	..
1915	1	1	...
1916	1	1	...

8. LATRINES.

	FOR MALES.		FOR FEMALES.	
	Number.	Number of seats.	Number.	Number of seats.
Number of Public Latrines :—				
1914	12	49	1	7
1915	13	56	2	14
1916	13	56	2	14
Number of new Public Latrines erected during the year :—				
1914	2	10	1	7
1915	1	7	1	7
1916	...	...	...	...
Number of Public Latrines repaired during the year :—				
1914	2	6	...	...
1915	2	7	...	...
1916	2	6	...	...
Number of Public Latrines demolished during the year :—				
1914	1	3	...	...
1915	...	...	...	...
1916	...	...	...	...

	1914.	1915.	1916.
Number of Private Latrines	647	724	632
Average number of pails of nightsoil removed daily ...	743	794	702
Average number of soiled pails removed and clean pails substituted	52	61	26
Number of nightsoil men employed to clean latrines and remove excreta	36	41	53
Number of cesspools	...	...	...
Number of cesspools cleansed	...	...	...
Number of new cesspools constructed during the year ...	...	...	...
Number of old cesspools abolished	1	...	...
Number of cesspools oiled regularly by Department ...	...	...	...

9. REMOVAL OF REFUSE.

	1914.	1915.	1916.
Number of dustbins	No record	No record	No record
Number of carts at work daily to remove refuse from streets	7	8	10
Amount of refuse removed daily	21 cartloads	34 cartloads	52 cartloads
Number of carts at work daily to remove refuse from yards and premises	7	8	10
Amount of refuse removed daily from yards and premises	15	17	20
Number of men employed for removing refuse ...	32	50	65

10. MODE OF DISPOSAL OF EXCRETA, REFUSE AND OFFAL.

	Daily average number of pails of excreta.			Daily average number of cartloads of refuse.			Daily average number of cartloads of Slaughter House and Market Offal.		
	1914.	1915.	1916.	1914.	1915.	1916.	1914.	1915.	1916.
Buried or trenched ...	743	801	830	...	...	...	...	...	...
Burnt ...	...	...	...	31	32	50	2	2	2
Thrown into sea ...	...	...	...	...	...	...	...	...	...
Otherwise dealt with ...	...	...	...	...	...	...	...	...	...

11. AVERAGE DAILY NUMBER OF CARTLOADS OF TIN CANS, BOTTLES, BROKEN CROCKERY, AND OTHER INCOMBUSTIBLE MATERIAL REMOVED FROM HOUSES, HUTS, AND COMPOUNDS.

1914.	1915.	1916.
2	2	2

12. WATER SUPPLY.

Nature of Water Supply.	1914.	1915.	1916.
Pipe-borne water :—			
Source (river, lake, or spring) :—			
Number of linear yards	...	...	...
Number of stand-pipes along roads	...	...	...
Number of stand-pipes in compounds and houses...	...	...	...
Wells :—			
Public :—			
Number	5	5	5
Number protected against surface water ...	5	5	5
Private :—			
Number	2	2	2
Number protected against surface water and mosquito-protected	2	2	2
Tanks :—			
Public :—			
Number underground	Nil	Nil	Nil
Number mosquito-protected and served by pumps...			
Number above ground			
Number mosquito-protected			
Number of 400 gallons capacity or less			
Number above 400 gallons			
Private :—			
Number underground	5	6	9
Number mosquito-protected	5	6	9
Number above ground	98	110	115
Number mosquito-protected	87	105	110
Number of 400 gallons capacity or less	45	52	52
Number above 400 gallons	58	58	63
Nature of tank :—			
Wood	...	...	...
Iron	98	108	113
Concrete	5	8	11
Barrels :—			
Number	16	12	15
Number mosquito-protected	5	7	8

13. DRAINAGE.

Nature of Drainage.	Public.	Private.
Masonry drains:—		
Lineal yards of masonry drains:—		
1914	1,556	971
1915	2,070	2,041
1916	3,412	2,751
Lineal yards re-constructed during the year:—		
1914	...	54
1915	...	107
1916	...	...
Lineal yards repaired during the year:—		
1914	...	84
1915	100	122
1916	...	85
Lineal yards of new drains constructed during the year:—		
1914	413	602
1915	514	1,070
1916	1,342	710
Earth drains or ditches:—		
Number of linear yards of ditches cleaned:—		
1914	17,873	No record
1915	5,128	No record
1916	3,786	No record
Number of linear yards of ditches dug and graded:—		
1914	2,800	No record
1915	500	No record
1916	1,397	No record
Average frequency of clearing ditches of grass:—		
1914	9	No record
1915	8	No record
1916	8	No record

14. CLEARANCE OF UNDERGROWTH, LONG GRASS AND JUNGLE.

—	1914.	1915.	1916.
Number of square yards of weeds, grass, and vegetation cut and removed... ..	372,453	792,877	877,015
Average frequency of clearance of rank vegetation on same area	7 times	6 times	7 times

15. EXCAVATIONS AND LOW-LYING LAND.

—	1914.	1915.	1916.
Number of pools and excavations	100	307	No record
Number of excavations filled up	30	...	No record
Amount of low-lying and marsh land raised and drained	* 440,000	275,332	154,600
	sq. yards	sq. yards	sq. yards
Number of pools, marshes, streams, &c., fish-stocked ...	...	...	...
Number of cubic yards of material used for filling up pools and excavations	{ impossible to gauge }	...	...
Number of persons fined for making new excavations ...	...	...	...
Average number of men daily employed in filling up pools,&c.	?	...	...

16. OILING.

—	1914.	1915.	1916.
Number of drains oiled	25	...	...
Number of pools and excavations oiled	70	307	...
Number of tanks and barrels oiled	...	... [†]	... [†]
Average number of men daily employed for oiling drains, pools, and water-tanks or barrels... ..	6	6	...

* In process of clearing.

† This work is done by occupiers of premises.

17. INSPECTIONS AND PROSECUTIONS.

	1914.	1915.	1916.
Number of inspectors employed	2	2	2
Number of houses inspected	671	665	702
Number of houses where larvæ were found	39	580	1,486
Number of notices served to remove conditions causing the breeding of larvæ	39	108	24
Number of persons fined for having mosquito larvæ on premises	...	...	3
Number of notices served to remove insanitary conditions on premises	130	135	87
Number of persons fined for not removing insanitary conditions after notice	5	...	7
Number of soda and ærated water factories inspected ...	2	2	2

J. B. HARVEY,
*Assistant District Commissioner,
for District Commissioner.*

TABLE IV.—*continued.*

Summary of Routine Sanitary Work done during the Year in the Town.

1. NAME OF TOWN—JINJA.

---				Approximate Area.	Number of Proclaimed Open Spaces.
1914	...	...	...	2560 (4 square miles)	5 Tennis Courts (European, Goan, and Indian)
1915	...	...	...	do	do
1916	...	...	...	do	do

2. POPULATION.

---				NUMBER OF NATIVES INCLUDING ASIATICS.		NUMBER OF EUROPEANS.		TOTAL.
				Males.	Females.	Males.	Females.	
1914	...	...	...	1,707	1,077	50	17	2,851
1915	...	...	...	1,800	1,100	40	14	2,954
1916	...	...	...	2,205	1,560	34	16	3,815

3. HOUSING.

---					Number occupied by Europeans.	Number occupied by Natives including Asiatics.
Number of Houses :—						
1914	...	...	...	...	48	173
1915	...	...	...	...	48	175
1916	...	...	...	...	48	175

Number of Huts :—

1914	...	...	...	...	...	950	Approximately.
1915	...	...	...	...	...	1000	do
1916	...	...	...	...	...	1255	do

4. MOSQUITO PROTECTION OF HOUSES.

---	1914.	1915.	1916.
Number of European houses wholly mosquito-protected	29	29	29
Number of European houses with mosquito room	...	...	...
Number rendered during the year wholly mosquito-protected	...	...	...
Number rendered during the year partially mosquito-protected...	...	...	...

5. ERECTION OF NEW BUILDINGS DURING THE YEAR.

---	1914.	1915.	1916.
Number of public buildings erected with sanction as to site, construction, and relation to other buildings	...	...	...
Number of houses erected with sanction as to site, construction, and relation to other buildings...	4	2	1
Number of huts erected with sanction as to site, construction, and relation to other buildings...	16	20	1
Number of houses built without sanction	...	...	...
Number of huts built without sanction	300	300	350

ACTION TAKEN.

	NUMBER OF PROSECUTIONS.		NUMBER DEMOLISHED.	
	Huts.	Houses.	Huts.	Houses.
1914	...	...	314	...
1915	...	...	270	...
1916	...	...	95	1

6. MARKETS.

	Total Number.	Number Paved and Drained.	Number Unpaved.
1914	1	...	1
1915	1	...	1
1916	1	...	...

7. SLAUGHTER-HOUSES.

	Total Number.	Number Paved and Drained.	Number Unpaved.
1914	1	1	...
1915	1	...	...
1916	1	...	...

8. LATRINES.

	FOR MALES.		FOR FEMALES.	
	Number.	Number of seats.	Number.	Number of seats.
Number of Public Latrines :—				
1914	16	...	...	...
1915	20	...	...	...
1916	20	...	...	...
Number of new Public Latrines erected during the year :—				
1914	...	...	...	...
1915	4	...	...	...
1916	...	...	...	...
Number of Public Latrines repaired during the year :—				
1914	1	2	...	...
1915	...	...	...	...
1916	3	6	...	...
Number of Public Latrines demolished during the year :—				
1914	...	...	...	...
1915	...	...	...	...
1916	...	...	...	...

	1914.	1915.	1916.
Number of Private Latrines	208	216	216
Average number of pails of nightsoil removed daily ...	400	400	400
Average number of soiled pails removed and clean pails substituted	...	...	...
Number of nightsoil men employed to clean latrines and remove excreta	16	20	20
Number of cesspools	13	13	13
Number of cesspools cleansed	...	...	...
Number of new cesspools constructed during the year ...	...	...	...
Number of old cesspools abolished	...	...	...
Number of cesspools oiled regularly by Department ...	...	...	...

9. REMOVAL OF REFUSE.

	1914.	1915.	1916.
Number of dustbins	1	1	1
Number of carts at work daily to remove refuse from streets	...	...	...
Amount of refuse removed daily	...	...	...
Number of carts at work daily to remove refuse from yards and premises	4	4	4*
Amount of refuse removed daily from yards and premises	22	22	22†
Number of men employed for removing refuse ...	27	27	27

10. MODE OF DISPOSAL OF EXCRETA, REFUSE AND OFFAL.

	Daily average number of pails of excreta.			Daily average number of cartloads of refuse.			Daily average number of cartloads of Slaughter House and Market Offal.		
	1914.	1915.	1916.	1914.	1915.	1916.	1914.	1915.	1916.
Buried or trenched	...	...	...	22	22	...	1	1	1
Burnt	200	...	400	...	...	22	...	...	1
Thrown into sea	12	...	...	...	...	...	...	...	...
Otherwise dealt with	...	...	...	...	...	...	...	...	...

11. AVERAGE DAILY NUMBER OF CARTLOADS OF TIN CANS, BOTTLES, BROKEN CROCKERY, AND OTHER INCOMBUSTIBLE MATERIAL REMOVED FROM HOUSES, HUTS, AND COMPOUNDS.

1914.	1915.	1916.
1	1	1

12. WATER SUPPLY.

Nature of Water Supply.	1914.	1915.	1916.
Pipe-borne water :—			
Source (river, lake, or spring) :—			
Number of linear yards	...	...	...
Number of stand-pipes along roads	...	...	...
Number of stand-pipes in compounds and houses...	...	...	...
Wells :—			
Public :—			
Number	...	...	...
Number protected against surface water ...	...	...	...
Private :—			
Number	...	...	...
Number protected against surface water and mosquito-protected	...	...	...
Tanks :—			
Public :—			
Number underground	...	...	...
Number mosquito-protected and served by pumps...	...	...	...
Number above ground	...	...	...
Number mosquito-protected	...	...	...
Number of 400 gallons capacity or less	...	...	...
Number above 400 gallons	...	...	...
Private :—			
Number underground	...	...	...
Number mosquito-protected	...	...	...
Number above ground	35	40	40
Number mosquito-protected	35	40	40
Number of 400 gallons capacity or less	33	38	38
Number above 400 gallons	2	2	2
Nature of tank :—			
Wood	...	...	...
Iron	33	33	33
Concrete	2	7	7
Barrels :—			
Number	...	...	...
Number mosquito-protected	...	...	...

*Includes streets.

†Cart loads (includes amounts removed from streets).

13. DRAINAGE.

Nature of Drainage.	Public.	Private.
Masonry drains :—		
Lineal yards of masonry drains :—		
1914	...	...
1915	...	...
1916	...	...
Lineal yards re-constructed during the year :—		
1914	...	...
1915	...	...
1916	...	...
Lineal yards repaired during the year :—		
1914	...	...
1915	...	...
1916	...	...
Lineal yards of new drains constructed during the year :—		
1914	...	...
1915	...	...
1916	...	...
Earth drains or ditches :—		
Number of linear yards of ditches cleaned :—		
1914	} No record	...
1915		
1916		
Number of linear yards of ditches dug and graded :—		
1914	No record	...
1915	600 "	...
1916	yards	...
Average frequency of clearing ditches of grass :—		
1914	} Every month	...
1915		
1916		

14. CLEARANCE OF UNDERGROWTH, LONG GRASS AND JUNGLE.

	1914.	1915.	1916.
Number of square yards of weeds, grass, and vegetation cut and removed... ..	1,570,000	1,570,000	1,570,000
Average frequency of clearance of rank vegetation on same area	Approximate ly. Every month.		

15. EXCAVATIONS AND LOW-LYING LAND.

	1914.	1915.	1916.
Number of pools and excavations	...	...	...
Number of excavations filled up	...	...	...
Amount of low-lying and marsh land raised and drained	...	...	...
Number of pools, marshes, streams, &c., fish-stocked ...	...	...	...
Number of cubic yards of material used for filling up pools and excavations	...	...	...
Number of persons fined for making new excavations ...	...	...	...
Average number of men daily employed in filling up pools, &c.	...	...	..

16. OILING.

	1914.	1915.	1916.
Number of drains oiled	...	1	...
Number of pools and excavations oiled	...	5	10
Number of tanks and barrels oiled	...	...	...
Average number of men daily employed for oiling drains, pools, and water-tanks or barrels	...	7	7

17. INSPECTIONS AND PROSECUTIONS.

	1914.	1915.	1916.
Number of inspectors employed	1	1	1
Number of houses inspected	236	223	223
Number of houses where larvæ were found	49	31	12
Number of notices served to remove conditions causing the breeding of larvæ	49	31	5
Number of persons fined for having mosquito larvæ on premises	...	13	...
Number of notices served to remove insanitary conditions on premises	47	121	54
Number of persons fined for not removing insanitary conditions after notice	3	19	11
Number of soda and ærated water factories inspected ...	2	1	1

CECIL W. V. CAREY,

*Assistant District Commissioner,
for District Commissioner.*

TABLE VII.

**Return of Diseases (All Cases—both In and Out-Patients)
for the Year 1916.**

Diseases.						Total.	Deaths.
INFECTIVE DISEASES.							
Beri-Beri	...	...	...	...	...	2	—
Cerebro-Spinal Fever	...	...	...	...	...	71	42
Chicken-Pox	...	...	...	...	...	26	—
Cholera	...	...	...	...	...	—	—
Dengue	...	...	...	...	...	2	—
Diphtheria	...	...	...	...	...	—	—
Dysentery	...	...	...	...	...	827	19
Endocarditis—Infective	..	...	...	...	...	—	—
Enteric	...	...	...	...	...	16	1
Erysipelas	...	...	...	...	...	2	—
Gonorrhœa	...	...	...	...	...	1,863	3
Influenza	...	...	...	...	...	25	—
Kala Azar	...	...	...	...	...	—	—
Leprosy (a) Nodular	...	...	...	...	...	11	—
(b) Anæsthetic...	...	...	...	...	...	3	—
Malaria (a) Tertian	...	...	...	...	...	11	—
(b) Aestivo-autumnal	...	...	...	...	...	5,591	10
(c) Chronic Malaria	...	...	...	...	...	73	—
(d) Black-water	...	...	...	...	...	36	10
Measles	...	...	...	...	...	14	—
Malta Fever	...	...	...	...	...	3	—
Plague	...	...	...	...	...	321	283
Pneumonia	...	...	...	...	...	152	24
Rabies	...	...	...	...	...	—	—
Relapsing Fever	...	...	...	...	...	148	1
Rheumatic Fever	...	...	...	...	...	57	—
Septicæmia	...	...	...	...	...	3	2
Trypanosomiasis (Sleeping Sickness)	...	...	...	...	...	16	7
Small-Pox	...	...	...	...	...	104	25
Syphilis (a) Primary	...	...	...	...	...	825	—
(b) Secondary	...	...	...	...	...	1,026	1
(c) Tertiary	...	...	...	...	...	2,020	4
(d) Inherited	...	...	...	...	...	765	1
Tetanus	...	...	...	...	...	—	—
Tuberculosis...	...	...	...	...	...	14	4
Whooping Cough	...	...	...	...	...	6	—
Yaws	...	...	...	...	...	720	—
Yellow Fever	...	...	...	...	...	—	—
Mumps	...	...	...	...	...	34	—
Pyrexia—Uncertain Origin	...	...	...	...	...	2,903	16
Anthrax	...	...	...	...	...	1	1
Others	...	...	...	...	...	4	—
INTOXICATIONS.							
Alcoholism	...	...	...	...	...	—	—
Morphinism	...	...	...	...	...	3	1
Others	...	...	...	...	...	—	—
GENERAL DISEASES.							
Anæmia	...	...	...	...	...	402	4
Anæmia—Pernicious	...	...	...	...	...		
Diabetes	...	...	...	...	...		
Exophthalmic Goitre	...	...	...	...	...		
Gout	...	...	...	...	...		
Leucocythæmia	...	...	...	...	...		
Hodgkin's Disease	...	...	...	...	...		
Myxœdema	...	...	...	...	...		
Purpura	...	...	...	...	...		
Rickets	...	...	...	...	...		
Scurvy	...	...	...	...	...		

RETURN OF DISEASES ALL CASES—BOTH IN AND OUT-PATIENTS
FOR THE YEAR 1916—*continued.*

Diseases.					Total.	Deaths.
LOCAL DISEASES.						
Nervous Diseases :—						
Sub-section 1	...	...	...	...	351	3
Sub-section 2	...	...	...	...	1,160	3
Sub-section 3	...	...	...	...	15	3
Diseases of the Eye	...	...	..	...	4,543	—
Diseases of the Ear	...	...	...	...	1,380	1
Diseases of the Nose	...	...	...	...	1,189	—
Diseases of the Circulatory System	...	...	...	...	60	5
Diseases of the Respiratory System	...	...	...	...	9,649	19
Diseases of the Digestive System	...	...	...	...	9,753	27
Diseases of the Lymphatic System	...	...	...	...	751	1
Diseases of the Urinary System	...	...	...	...	102	7
Diseases of the Generative System :—						
Male	...	...	...	...	807	—
Female	...	...	...	...	250	6
Diseases of the Organs of Locomotion	...	...	...	...	4,449	1
Diseases of the Connective Tissue	...	...	...	...	1,588	4
Diseases of the Skin	...	...	...	...	12,451	2
Injuries	...	...	...	...	8,164	9
Tumours	...	...	...	..	33	—
Malformations	...	...	...	...	1	—
Poisons :—						
Snake Bite	...	...	...	...	17	—
Others	...	...	..	...	15	2
Parasites :—						
Animal	...	...	...	...	—	—
Protozoa	...	...	...	...	1	—
Trematoda	...	...	...	...	—	—
Cestoda	...	...	...	...	85	—
Nematoda	...	...	...	...	151	1
Insecta	...	...	...	...	472	—
TOTAL					75,537	553
SURGICAL OPERATIONS					1,406	1

APPENDIX I.

Annual Report, 1916.

Government Dental Surgeon.

Out-stations Visited.						No. of Visits
Kampala	....	....	....	....	....	8
Jinja	....	....	....	..	....	4
Bombo	....	....	....	....	....	2
Masindi	....	....	....	....	....	2
Gulu ....	....	....	....	....	....	1
Butiaba	...	....	....	....	....	1
Masaka	....	....	....	....	....	1

Number of patients attended....	..	...	....	241
Number of visits of patients ....	....	....	....	579
Number of artificial dentures made				23
Number of repairs, etc., to dentures			...	12

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APPENDIX II.

PLAGUE EPIDEMIC.

Kampala, Port Bell and Jinja Outbreaks.

On September 24th sudden death was reported in a railway porter working on the pier at Port Bell, and on investigation it was reported that rats had been dying in large numbers in a goods shed on the pier, and *Bacilli Pestis* were found in one of the dead rats examined.

2. Shortly after rats were reported to be dying at two ginneries at Kampala, and cases occurred among the employees there, and simultaneously cases occurred in the Bazaar, where house after house became infected chiefly among the older and more dilapidated premises.

3. Infected rats were found here and there in the Bazaar but not in large numbers as at the ginneries and at Port Bell, and a few infected rats were found in the Police lines where two cases occurred, and also in the European residential quarter where fortunately no human case has occurred up to date.

4. Altogether 25 cases occurred in and around Port Bell chiefly among men working on the pier but also in a coffee curing factory half a mile away where dead rats were also found: and in the environs of Kampala sporadic cases occurred, the infection in nearly all of which could be traced to the Bazaar or Port Bell. Cases in the Bazaar continued all through October but in November as the premises became cleaned up the epidemic in the Bazaar has gradually diminished. After three weeks' interval a case occurred in the Bazaar on 12th December, 1916, since when there has been no case there.

5. Unfortunately however in the third week in November a serious outbreak was discovered in the Soudanese village of Kololo, $1\frac{1}{2}$ miles from the Bazaar. On investigation the infection was found to have been brought from the Bazaar on October 17th and that 7 fatal cases had occurred in the village which had not been reported and had been buried secretly. Of the 400 odd inhabitants of this Soudanese village, altogether 65 cases occurred up till December 8th since when there has been no case. These cases were nearly all of the septicæmic type with 63 fatal.

6. A few cases of both rat and human plague have been reported in the other hills surrounding the town and in two places 20 and 40 miles away rats were found dying, but, with the exception of that at Kololo, there has been no serious outbreak.

7. Cases up to 31st December, 1916:—

Kampala town and surroundings	213,	deaths	193.
Port Bell	....	....	25, „ 23.

8. Meanwhile at Jinja rats had been examined by the Senior Medical Officer but none were found infected up to the 6th of October, when several were found in a cotton store near the Railway Station and in several food stores, etc., in the vicinity.

9. On the 5th October a fatal case of pneumonic plague was brought to hospital. A native assisting at the post-mortem became infected and died.

10. Other cases occurred chiefly in the vicinity of the Railway Station and among men employed in the ginneries.

11. Though plague rats were continually found in the Bazaar cases there have been surprisingly few.

12. Infected rats are still reported in the vicinity of the Bazaar but the percentage of rats caught which show plague bacilli is now very small. There have been very few human cases at Jinja as compared with Kampala and the number is on the decrease. The Senior Medical Officer attributes this to the inoculation of practically the whole permanent population.

13. Sixty-three cases have occurred up to December 31st with 54 deaths.

14. An Indian who left the Jinja Bazaar and went to Namasagali shortly after contracted the disease.

15. At Kampala no cases of the true pneumonic type were observed but there was a large percentage of the septicæmic type which shewed no buboes but in which, in nearly all cases, the diagnosis was confirmed microscopically by smears of blood or spleen smears.

16. At Jinja a few pneumonic cases were recorded.

17. The anti-plague serum in some cases failed to confer immunity especially among those who had been inoculated for more than two months. Some of the serum was old material obtained from Bombay in 1914.

Preventive Measures Taken.

KAMPALA AND PORT BELL.

(1). The Port and the Town of Kampala were promptly declared infected so as to enforce the rules made under the Infectious Diseases Ordinance.

(2). Patients were isolated and contacts segregated.

(3). To effect this the two barbed-wire enclosures which were intended for Entebbe, but had been requisitioned by the military authorities for the internment of German prisoners, were erected at Kampala in addition to the two already established.

(4). The import into Port Bell of seed cotton, coffee and hides was prohibited. (Latterly when the coffee curing factory had been disinfected and cleared the embargo on coffee was removed.)

(5). The Pier has been closed to all persons, including both incoming and outgoing passengers, except those provided with special passes or certificates of recent inoculation.

(6). Ships were not allowed alongside the pier at night.

(7). The export and import of all merchandise on passenger ships (not including passenger's luggage) was prohibited from 6th to 16th November by a special rule proclaimed under the Ordinance till the goods remaining on the infected pier could be removed in lighters and the pier and goods shed cleared and disinfected.

(8). Inoculation with Haffkin's serum of the inhabitants of the town, port and surroundings was performed to the number of over 20,000 persons. No difficulty was experienced in persuading the people to be inoculated and a much larger number could have been thus protected but that the supply from Bombay is limited.

(9). Barriers, guarded by special police, were erected on all roads leading to the town of Kampala and no persons or merchandise allowed to leave the town unless provided with a pass.

(10). The cotton ginneries were closed down and a certain store of infected cotton seed burnt.

(11). Rat traps and poison were distributed and rat drives instituted in the town and rewards offered of three cents per rat.

(12). As the epidemic increased rapidly in the Bazaar, all shops were closed on October 13th for ten days.

(13). The whole Bazaar was thoroughly cleansed, heaps of timber, vegetation and rubble removed from back compounds and several old houses pulled down and disinfectants liberally distributed.

(14). The Township Rules restricting the storage of grain, seed cotton, etc., in shops were rigidly enforced.

(15). The Police lines becoming infected the majority of these were burnt down, as also were native lines for Public Works Department and Transport employees.

(16). Pamphlets were printed and distributed acquainting the public with the regulations to be enforced and giving advice as to precautions to be taken.

(17). A further series of Rules under the Infectious Diseases Ordinance has been published giving further powers in dealing with infected premises, contacts, etc.

(18). Restrictions on passengers leaving town have been relaxed since November 17th to relieve the serious depression in the trade of the town: the import and export of goods is still controlled by means of permits.

(19). When the Soudanese village at Kólolo was found to be seriously affected, the whole of it was burnt, the inhabitants camping in their shambas close by as they were too numerous for the quarantine camp for contacts. All the inhabitants of this village were regarded as contacts for the present and guards were posted to prevent their leaving the area where they were segregated. These people have now been released from quarantine.

(20). The natives have been instructed to make organised rat drives on the hills surrounding Kampala and to render a return of rats killed. This has been carried out on a large scale. Over 4,000 rats' tails have been counted.

(21). Inspectors are employed to look for concealed cases of plague in the surrounding district.

(22). Several of the older premises in the Kampala Bazaar have been permanently closed and are being pulled down.

(23). The recruits in Police Dépôt were inoculated, quarantined for 10 days and removed to Entebbe.

AT JINJA

(24). Preventive measures have been carried out on similar lines to those at Kampala and Port Bell. (b) The Township and Port were declared infected but it has not been necessary to close the town for trade. (c) With the assistance of volunteer helpers over 12,000 persons were inoculated. (d) Arrangements were made whereby the labourers engaged to work in Jinja during October who should have been replaced by fresh supply in November, continued to work during the latter month thereby reducing the number of people requiring inoculation. (e) Systematic rat drives have been organised with good results; all rats examined for Plague Bacilli. (f) A large store of infected cotton seed was burnt and an infected labour camp destroyed and all native huts removed from the European residential quarter.

AT ENTEBBE

(25). Extra precautions have been taken to prevent the plague entering the town especially as regards the pier and shipping as well as concreting of go-downs and measures taken to keep down rats.

AT BOMBO

(26). The Military Headquarters, 20 miles from Kampala. Pickets have been posted to control travellers from Kampala and the troops have been inoculated.

AT NAMASAGALI

(27). All the permanent residents were inoculated and no further case has been reported since the one mentioned above.

Origin of Plague.

(1). As to the origin of this visitation of plague, I regard the two outbreaks at Kampala and Jinja as part of the same epidemic.

(2). In my opinion and in that of the Medical Officer of Health, Kampala, the infection was brought to Kampala from the endemic plague areas in the Eastern Province by means of infected rats in cargo on the lake steamers.

(3). The incidence of rat and human plague on the pier at Port Bell followed immediately after by the appearance of rat and human plague at the cotton ginneries at Kampala, leads one to the conclusion that seed cotton was the infected cargo in question.

(4). Both the ginneries which became infected at Kampala receive the bulk of their seed cotton from the Eastern Province and were the only two ginneries receiving cotton at the time.

(5). Moreover when the cotton was being unloaded from carts in which it was brought from Port Bell, at one of these ginneries live rats were actually seen among the bags of cotton.

(6). If it is possible for rats to find harbourage in seed cotton in moving carts they will do so in the lake steamers on Lake Chioga, the railway trucks between Namasagali and Jinja as well as in the steamers on Lake Victoria and in my opinion the rats have brought the infection from the endemic area round Lake Chioga in this manner.

(7). Some of the seed cotton was stored for months at Jinja awaiting shipment and for weeks on the pier at Port Bell and this would tend to encourage rats to find harbourage in the cotton.

(8). That the disease did not show itself in Jinja at an earlier date does not to my mind disprove the theory as it may have existed in a quiescent stage in the rats for weeks or months.

(9). Another possible factor in the Kampala outbreak is that owing to pressure of war work it has not been possible to subject the lake steamers to claytonisation as frequently as formerly.

ADMINISTRATIVE.

To cope with the extra work thrown on the Municipal and Medical Departments:—

- (a). An additional Sub-Assistant Surgeon was sent to both Kampala and Jinja.
 - (b). Dr. Spearman was temporarily transferred from the Lango District to assist Dr. van Someren.
 - (c). The Sanitary Inspector at Kampala, Mr. Mackenzie, was re-called from military duty and the services of Mr. Littlewood, who has been acting as his relief, have been retained for the present in addition.
 - (d). The native staffs of the isolation hospitals were increased and medical police engaged to act as guards on contacts, etc.
- (10). The expenditure entailed by the epidemic has been as follows:—

	Rs.	cts.
Pay :—Superintendents, inspectors and police guards	1,186	00
Native attendants :—Isolation camps	246	56
Equipment and up-keep :—Camps	637	66
Rewards for rats	192	22
Rat traps and poison	124	40
Contingencies :—Miscellaneous	100	00
Contingencies :—Building camps	523	25
Contingencies :—Removal police lines	1,245	00
New huts for Public Works Department, Transport and Customs	244	50
New huts for Police	7,035	00
Compensation for grain destroyed at Jinja	405	00

TOTAL ... Rs. 11,939 59

= £795 19 6

(11). It is not anticipated that any further extra expenditure of any magnitude will be necessary and up to date no claims for compensation for loss of infected goods destroyed have been put forward.

(12). The epidemic has been a serious blow to commerce, especially in Kampala, but with the exception of some of the lower class Indian shopkeepers the people both at Kampala and Jinja have philosophically submitted to the stringent regulations imposed and have given every assistance to the Medical and Municipal authorities in carrying them out and the lay members of the Local Sanitary Boards have given loyal support to the Medical authorities in the prosecution of the measures prescribed.

(13). Sub-Assistant Surgeon A. D. Kharkanis deserves much credit in that in the absence of the Senior Medical Officer he insisted, in spite of much opposition from the deceased's Mahommedan relatives, in performing a post-mortem on the first case of plague at Jinja. The establishment of the diagnosis by this means induced the Senior Medical Officer, Dr. van Someren, to begin the inoculation of the Jinja inhabitants at the outset of the epidemic thereby most probably saving many lives.

(14). The Medical Officer of Health, Kampala, reports very favourably on the good work done by Sub-Assistant Surgeon Achru Ram in the care of plague cases and the examination of rats.

(15). I was away until October 30th on military duty so that the preventive measures so promptly carried out were organised by Dr. Collyns, Medical Officer of Health at Kampala, and Capt. van Someren, Senior Medical Officer at Jinja; in this they were ably assisted by Major Strathairn, Senior Medical Officer, Kampala, and Dr. Spearman.

(16). It is a matter for congratulation that, owing to the precautions taken, the large number of troops and military porters passing through the infected ports were kept free of plague.

ENTEBBE,

31ST DECEMBER, 1916.

C. J. BAKER,

Medical Sanitary Officer.

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